

Prescribed Fire Guidelines

(August 2004 draft)

These guidelines are divided into five sections: training recommendations, safety recommendations, burn plan components, sample burn plans, and resources for more information.

This document has been created as a safety tool for Iowa land managers. It is for use to reduce the risks inherent with prescribed fire. Before *any* fire is started, all possible precautions should be taken to insure the safety of personnel and property. This includes training, equipment, and site preparation.

A. Training recommendations:

It is strongly recommended that NWCG (National Wildfire Coordinating Group) standards be followed for prescribed fires in Iowa. Their website is included in the reference section of this document. The NWCG defines a large variety of positions within an "incident command system" for firefighting situations. They compose task books and coursework to train individuals interested in being certified for the various positions.

It is always preferable to have highly trained firefighters working on a prescribed fire, for both safety and liability reasons. For non-complex, low risk prescribed fire it is recommended that the burn boss be ranked as a Burn Boss 3 (RxB3, a position created by the US Fish & Wildlife Service for low complexity burns) or at least have completed the required coursework. For more complex prescribed fires the burn boss should have completed both the coursework and the task book for Burn Boss accreditation (NWCG RxB1 or RxB2, or USFWS RxB3). Complex prescribed fires should also have squad bosses who have completed the NWCG Fire Fighter Type 1 training, or NWCG s130/s190 (Basic Wildland Firefighting/Introduction to Wildland Fire Behavior), 131 (Advanced Firefighter Training), and s290 (Intermediate Wildland Fire Behavior). Crew firefighters on both simple and complex prescribed fires should have completed NWCG s130/s190 or be paired with someone who has completed those courses.

It should be noted that most federal agencies require more stringent levels of accreditation for their fire crews. Partnering with these agencies to increase the amount of fire management done in Iowa may require RxB2 or RxB1 certification for burn bosses.

There are refresher courses for some NWCG levels. To maintain a "red card" individuals need to have completed the s130/s190 courses (once), pass at least a moderate level pack test (carry 25 lbs. two miles in 30 minutes), and attend a yearly one-day refresher course. Refresher courses for other NWCG positions vary. In some cases refresher courses are not offered; certification is maintained by performing in the credentialed capacity (or higher) on a fire assignment at least once per year.

B. Equipment recommendations:

Personal Protective Equipment: It is recommended that all fire personnel wear Nomex clothing (shirt and pants), high top leather boots, leather gloves, fire rated hardhat, eye/ear protection, and all underclothing be of natural fiber. The danger of wearing

polyester or other synthetic materials should be emphasized with anyone attending a burn. Roadside visibility materials are essential if the fire is near a roadway.

Personnel also should carry a fire shelter (for protection from flames and superheated gasses in the event of entrapment) and fussees (as a means to light a separate fire in order to burn out a safety zone ahead of the threatening fire front). A fussee should not be considered an alternative to a fire shelter; in some conditions a fire shelter will be critically needed but a fussee will be useless.

Recommended Tools: The tools needed for a safe prescribed fire will vary with each fire and should be specified in the burn plan. A drip torch(es), pre-tested 2-way radios, cell phone, flappers, rakes, backpack pumps, weather kit, and a first aid kit will be needed for most fires. Additional commonly used items include a stop/go paddle if the fire is near a roadway, chain saws, mechanized water transport, leaf blower, and a fire weather portable radio.

C. Burn plan components:

Because of the large degree of variation in the complexity of prescribed burns, there are no standardized burn plans. A burn plan can be short or long, depending on the complexity of the proposed burn and the desires of the burn boss. This section covers the components that should be included in any burn plan, and the items potentially included in each component.

All burn plans should include the following sections:

1. Site information
2. Burn site specific information
3. Objectives & Goals
4. Site preparation
5. Organization: personnel & equipment
6. Prescription: weather, fire behavior, smoke management
7. Ignition & holding plan (with map)
8. Contingency plan (wildfire response plan)
9. Mop up
10. Post burn evaluation.

For each section there are numerous sub-headings that may or may not be included in a specific burn plan. Whether or not a sub-heading is included in a specific burn plan is determined by the site and the preferences of the burn boss. Each section and potential headings are discussed below:

1. Site information: this section contains contact information for the site to be burned.

Potential headings:

Owner: Name, home Phone, cell phone

Property: Name, Address

Location: Section, township, range, 911 address, GPS coordinates

Contact information:

Local dispatch center
Fire Department
Public Safety Communication Center
Medical Emergency:
Other:
Courtesy notifications: neighbors, organizations

2. Burn site-specific information: this section is for information specific to the burn being planned. Potential headings:

Target date range:

Permits needed (check all appropriate):

Air quality

City ordinance

Fire chief

None

Estimated Size of Burn:

Description of Burn Site (attach drawing or photo of site, indicate N and other pertinent landmarks):

Overstory (percent canopy, basal area, height):

Understory (percent, height):

Warm season grasses:

Cool season grasses:

Forbs:

Shrubs or Brush:

fuel type:

site topography (slope, aspect):

area of contiguous fuels:

firebreaks present (indicate on map also):

backup firebreaks present (indicate on map also):

closest water source (type and distance):

other water source(s):

Previous burn management (dates, results, wildfire or prescribed, etc.):

Description of adjacent area (if significantly different in fuels, topography, etc.):

Special Considerations (flora, fauna, safety, public not in agreement, etc.)

Smoke sensitive areas within 3 miles (people with asthma, buildings, roads):

Hazards (power lines, gas lines, wells, etc.):

3. Objectives & Goals: This section contains information about the reason(s) the burn is being planned. Potential headings:

Management objective:

WUI considerations (hazardous fuel reduction)

Hazard reduction

Ecological

Training

Resource objective (be specific, for example "increase forb component by 20%):

Stimulate warm season grass

Stimulate cool season grass
Reduce cool season grass
Stimulate forbs
Manipulate grazing
Control invasive plants
Improve habitat
Remove litter

4. Site preparation: This section details work that needs to be done prior to the planned burn. Potential headings:

Firebreaks needed: type (dozer line, hand line, mowed, other) length, width
Identification and location of natural firebreaks: roads; crop fields, waterways
(note material composition and width)

5. Organization-personnel equipment: This section outlines the organizational and equipment needs of the planned burn. Potential headings:

Firing crew:
Holding crew:
Traffic control crew:
Equipment:
Other:

6. Prescription: This section covers data to be collected immediately before ignition of the planned burn. Some items must fall within a previously determined range or the burn will be cancelled.

Weather: Acceptable Burning Parameters (indicate minimum/maximum or circle all appropriate):

Type of firing method: backing flank ring strip head head

Allowable Rate of Spread (specify ft./min. or ch./hr.):

Allowable Flame Length (feet):

Allowable Mid-Flame Wind Speed (mph):

Allowable Wind Direction: N, NE, E, SE, S, SW, W, NW

Relative Humidity (percent):

Temperature (Fahrenheit):

Time of Year: Spring summer dormant

Fuel Moisture: 4-8 1-hr. TLF3 7-12 10-hr. TLFM (fuel sticks)

Days Since Last Rain:

Fire behavior:

Smoke management:

7. Ignition & holding plan – map. This section contains the protocol to be followed immediately before ignition of the burn; some headings are to be filled in at that time. Potential headings:

Map of burn site (may be included w/site description)

Pre-Burn Contacts:	When	Who Will Do Contacting
Weather Service	Day before	
Fire Departments	Day before	
Conservation Officer	Day before	
County Sheriff	Day before	
County Health	Day before	
Local Residents	ASAP and day before	

Burn Day Contacts:

Weather Service	AM
All Cooperators	AM
Local Residents	AM
Fire headquarters	AM

Weather Data (circle source):

NOAA NWS Internet Media (specify) Other (specify)

- | | |
|--------------------|------------------------------|
| 1. Sky: | 6. Highest Temperature: |
| 2. Precipitation: | 7. Lowest Relative Humidity: |
| 3. Cold Fronts: | 8. Atmospheric Stability: |
| 4. LASI: | 9. Wind Speed: |
| 5. Wind Direction: | 10. Mixing Height: |

note: on-site weather data collection is needed before, and during, a burn

Firing technique: this is often not decided until the day of the burn

GO-NO-GO Check List:

1. Are all fire prescription specifications met?
2. Is the weather forecast favorable now and throughout burn?
3. Are all necessary lines constructed and checked?
4. Are all personnel required in the plan on-site?
5. Have all personnel been briefed on the prescribed burn plan?
6. Have all personnel been briefed on safety hazards, escape routes, and safety zones?
7. Do all personnel have the required PPE with them?
8. Is all required equipment in place and in working order?
9. Do you have needed direct communications established?
10. Do you have access to adequate water?
11. Do you have all keys and gate access?
12. Have you made all notifications?
13. In your opinion can the burn be carried out according to the plan and will it meet the planned resource management objectives?

If all 13 Go-No Go questions were answered "yes", you may proceed with the test fire.

8. Contingency plan: wildfire response plan

9. Mop-up: This section contains details of the post-burn clean up needs

10. Post burn evaluation:

Operational data

Weather data after burn

Vegetation status after burn (pre- and post- burn photographs are both ideal and simple to collect, and can be compared to photos taken months later)

Rx fire summary

Recommendations for future management

D. Sources for More Information:

PLANNING RESOURCES

Tall Timbers Fire Ecology Database - <http://www.ttrs.org/feco.html>

NFDRS - <http://www.seawfo.noaa.gov/fire/olm/nfdrs.htm>

ICS Forms - <http://www.nwcg.gov/pms/forms/icsforms.htm>

Florida Division of Forestry - <http://flame.doacs.state.fl.us/>

Riverside Fire Lab - <http://met.rfl.psw.fs.fed.us/index.html>

National Climate Data Center - <http://lwf.ncdc.noaa.gov/oa/ncdc.html>

NPS Fire monitoring handbook- <http://www.nps.gov/fire/wildland/science/effects.htm>

Fire Effects information System - <http://www.fs.fed.us/database/feis/>

Ventilation Climate Information System – www.fs.fed.us/pnw/fera/vent

Fire Behavior Prediction programs – www.fire.org

WEATHER

NWCG Weather Links and much more –

<http://www.nwcg.gov/teams/wfewt/NWCGBib/fireweather.html>

Accuweather - <http://www.accuweather.com>

Boise Fire Weather - <http://www.boi.noaa.gov/firewx.htm>

Lightning - <http://www.lightningstorm.com>

Satellite Images - <http://www.osei.noaa.gov/Events/Fires/>

FS Wildfire Assessment System - <http://www.fs.fed.us/land/wfas/>

Drought Monitor - <http://drought.unl.edu/monitor/monitor.html>

Fire Weather Training Modules - <http://www.seawfo.noaa.gov/fire/olm/NWSFWX.htm>

OTHER SITES

Wildland Fire - <http://www.wildlandfire.com/>

Cerro Grande Report - <http://www.nps.gov/fire/fireinfo/cerrogrande/>

Geomac – Wildfire Information – http://geomac2.cr.usgs.gov/fms_conus

The Nature Conservancy Fire Management – www.tncfire.org

National Interagency Prescribed Fire Training Center – <http://fire.r9.fws.gov/pftc>

USFWS/Bureau Indian Affairs fire training - <http://fire.fws.gov/fm/training.htm>

USFWS Prescribed Fire Burn Boss 3 (RxB3) task book -

<http://www.bianifc.org/training/RXB3TASK.pdf>

National Wildfire Coordinating Group home page – www.nwcg.gov

National Interagency Fire Center – www.nifc.gov

Tall Timbers - <http://www.ttrs.org>

E. Sample Burn Plans: TNC and USFWS